

OA and Sustainable Ocean Planning

Translates ocean accounting outputs into evidence for four planning use cases: ocean economy roadmaps, SDG 14 planning, integrated coastal management and marine spatial planning.

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Last updated September 2026 **Responsible officer** Dr Jordan Gacutan

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OUTCOME

Practitioners will gain practical understanding of four decision use cases. Sustainable ocean economy roadmaps integrate economic development targets with ecosystem health thresholds. SDG 14 implementation planning uses accounting-derived indicators to track progress on marine pollution, ecosystem management, fisheries sustainability, and economic benefits. Integrated coastal management connects land-based pressures to marine outcomes. Marine Spatial Planning organises the spatial allocation of ocean activities using coherent, integrated data that supports analysis of trade-offs and synergies.

Section 3.2 is the core of the Circular: Table 3.2.1 maps indicator to account source to SDG target, and Table 3.2.2 maps each planning use case to the accounts it requires, the indicators derived from them, and the decisions those indicators inform. Table 3.2.2 also serves as the account-prioritisation aid for countries able to compile only one or two account types at first.

Section 3.5 routes to the circular that treats each planning framework in depth, and Section 3.6 works a sustainability dashboard through from baseline accounts to scenario projections to a cabinet-level presentation. Where and how to stand up an accounting programme in the first place is treated in [TG-0.8 Implementation Readiness Assessment](#) rather than here.

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ABOUT THIS CIRCULAR

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DRAFT

¶1 ⓘ Framework Position

¶2 TG-1.4 is a Section 1 (Decision-Making) circular. It sits at the intersection of the accounting outputs produced in Sections 2, 3, and 4 and the governance processes that consume them. Its function is to translate structured accounting information into evidence for four specific planning use cases: sustainable ocean economy roadmaps, SDG 14 implementation planning, integrated coastal management, and Marine Spatial Planning. It applies the foundational concepts established in **TG-0.1 General Introduction to Ocean Accounts** to concrete decision contexts. TG-1.4 is a companion to **TG-1.2 Marine Spatial Planning**, which provides detailed MSP-specific guidance, and complements the other Section 1 circulars covering national budget processes, SDG reporting, and EBM. Practitioners compiling accounts for the use cases described here should follow the relevant Section 2, 3, and 4 circulars for account compilation methodology.

1. Outcome

¶1 Practitioners will gain practical understanding of four decision use cases. **Sustainable ocean economy roadmaps** integrate economic development targets with ecosystem health thresholds. **SDG 14 implementation planning** uses accounting-derived indicators to track progress on marine pollution, ecosystem management, fisheries sustainability, and economic benefits. **Integrated coastal management** connects land-based pressures to marine outcomes. **Marine Spatial Planning** organises the spatial allocation of ocean activities using coherent, integrated data that supports analysis of trade-offs and synergies.

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¶3 Section 3.5 routes to the circular that treats each planning framework in depth, and Section 3.6 works a sustainability dashboard through from baseline accounts to scenario projections to a cabinet-level presentation. Where and how to stand up an accounting programme in the first place is treated in **TG-0.8 Implementation Readiness Assessment** rather than here.

2. Requirements

- ¶1 **TG-0.1 General Introduction to Ocean Accounts** – provides foundational understanding of Ocean Accounts, the Ocean Accounts Framework, and the conceptual basis for measuring sustainability through changes in natural capital

¶2 Readers approaching Section 1 for the first time should begin with **TG-1.0 Ocean Accounting and the Blue/Ocean Economy**, the framing circular for the section, which sets out the ocean economy terminology used throughout, what an ocean account can and cannot certify about a blue economy claim, and the map from a policy question to the circular that answers it. It is recommended reading, not a prerequisite.

3. Guidance Material

3.1 What is sustainable ocean planning?

¶1 Sustainable ocean planning encompasses the processes through which governments, communities, and other stakeholders make decisions about how ocean and coastal areas will be used and managed. These decisions concern the spatial allocation of activities, the regulation of resource extraction, the conservation of ecosystems, and the pursuit of economic objectives in ways that maintain or enhance the long-term productivity and resilience of marine environments. As established in **TG-0.1**, sustainable ocean development entails three interconnected objectives: advancing

ocean-based economic activities that provide sustainable livelihoods, ensuring equitable distribution of benefits across society, and conserving and enhancing marine ecosystems and their ecological processes¹.

¶2 The practical challenge for sustainable ocean planning lies in reconciling competing demands on ocean space and resources. Fishing communities, shipping industries, offshore energy developers, tourism operators, conservation interests, and coastal residents all have legitimate claims on how marine areas should be managed. Planners require integrated information systems that can reveal the relationships between these different uses and the environmental conditions that underpin them. Traditional approaches to ocean management have often proved inadequate to the complexity of managing socio-ecological systems where environmental health underpins economic productivity, as they address individual sectors or issues in isolation².

Decision use cases for sustainable ocean planning

¶1 Ocean accounts support four principal decision use cases in sustainable ocean planning (see Section 3.5 for planning framework descriptions and Table 3.2.2 for required accounts).

¶2 **Sustainable ocean economy roadmaps** integrate economic development targets with ecosystem health thresholds. Asset accounts for fish stocks, mangroves, coral reefs, and seagrass meadows provide baseline values against which depletion or enhancement can be measured (**TG-3.1 Asset Accounts**). Ocean economy thematic accounts quantify current contributions to GDP and employment (**TG-2.5 Structure and Function of the Ocean Economy**). Combined presentations of natural and produced capital stocks enable planners to assess whether blue economy growth is generating real wealth or converting natural capital into economic output (**TG-3.8 Combined Presentations**). The 2025 SNA treatment of depletion as a production cost provides a direct mechanism for this assessment: when extraction exceeds sustainable yield, net domestic product falls, and the fall registers unsustainable resource use³.

¶3 **SDG 14 implementation planning** uses accounting-derived indicators to track progress on marine pollution, ecosystem management, fisheries sustainability, and economic benefits from sustainable ocean use. Physical extent accounts map directly to SDG indicator 14.5.1 (marine protected area coverage). Asset accounts for fish stocks support indicator 14.4.1 (proportion of fish stocks within biologically sustainable levels). Flow accounts for residuals support indicator 14.1.1 (coastal eutrophication and floating plastic debris density). Economic accounts enable assessment of the economic contribution of sustainable fisheries (14.7.1). The role of ocean accounts in supporting SDG 14 monitoring is detailed in Section 3.4⁴.

¶4 **Integrated coastal management** connects land-based pressures to marine outcomes through physical supply and use tables, supporting targeting of interventions to reduce nutrient loading, sediment transport, and other coastal impacts. The SEEA Central Framework enables systematic tracking of residual flows from land-based activities to marine receiving environments⁵. By spatially attributing pressures to sources and linking them to changes in ecosystem condition, ocean accounts support the identification of priority actions to reduce negative impacts⁶.

¶5 **Marine Spatial Planning (MSP)** has emerged as a widely adopted framework for organising the spatial allocation of ocean activities. MSP processes typically involve mapping existing uses and conditions, identifying conflicts and compatibilities between different activities, and establishing zones or regulations that govern what activities are permitted in different areas. The effectiveness of MSP depends on the availability of coherent, integrated data that can support analysis of trade-offs and synergies across multiple objectives⁷. Ocean Accounts provide this structured information⁸.

3.2 Sustainability indicators from ocean accounts

¶1 Three categories of sustainability indicators derived from ocean accounts are particularly relevant for sustainable ocean planning:

¶2 **Asset change indicators** track the stocks and changes in stocks of marine natural capital.

These include:

- ¶3 Changes in ecosystem extent (area of different marine and coastal ecosystem types)
- ¶4 Changes in ecosystem condition (physical, chemical, biotic, and landscape characteristics)
- ¶5 Changes in stocks of individual environmental assets (fish biomass, seabed minerals)
- ¶6 Ecosystem degradation (measured as the decline in expected future ecosystem service flows)

¶7 The 2025 SNA establishes that sustainability concerns the maintenance of capital stocks necessary for long-term development, and that depletion of natural resources should be treated as a cost of production⁹. Net Domestic Product (NDP), which deducts both depreciation of produced assets and depletion of natural resources from GDP, is thus conceptually superior to GDP as a measure of economic performance from a sustainability perspective¹⁰. Ocean accounts enable the calculation of ocean-specific contributions to these adjusted aggregates, and the resulting figures indicate whether ocean-based economic activity is maintaining or eroding the natural capital base.

Ecosystem condition accounts: index structure and reference conditions

¶1 For the reference condition options, normalisation formula, and aggregation methods used in ecosystem condition accounts, see **TG-2.1 Aggregate Biophysical Indicators of Environmental State** and **TG-3.1 Asset Accounts** Section 3.4.2.

¶2 **Flow indicators** measure the services provided by marine ecosystems and their relationship to economic activity:

- ¶3 Provisioning services (wild fish biomass harvested, aquaculture production, marine genetic resources)
- ¶4 Regulating services (coastal protection from storms and erosion, carbon sequestration in blue carbon ecosystems, water purification)
- ¶5 Cultural services (marine recreation, coastal tourism, cultural and spiritual values)

¶6 The *SEEA Ecosystem Accounting* framework organises ecosystem services into supply and use tables that record which economic sectors benefit from which ecosystem services, and which ecosystem assets supply those services¹¹.

¶7 **Pressure indicators** measure the impacts of human activities on marine environments:

- ¶8 Residual flows (pollution, marine debris, nutrient loading)
- ¶9 Resource extraction rates relative to regeneration capacity
- ¶10 Physical disturbance to marine habitats
- ¶11 Climate-related pressures (ocean warming, acidification, sea level rise)

¶12 The SEEA Central Framework provides the structure for recording these physical flows between the economy and the environment through Physical Supply and Use Tables (PSUTs)¹². By spatially attributing pressures to sources and linking them to changes in ecosystem condition, ocean accounts support the identification of priority actions to reduce negative impacts.

¶13 The following table summarises how indicators from different account types link across environmental, economic, social, and governance domains, and how each connects to specific SDG 14 targets.

¶14 *Table 3.2.1: Indicator-account linkage across sustainability domains*

Domain	Indicator	Account Source	Measurement	SDG Link
Environmental	Ecosystem extent	Extent accounts	Hectares	14.2, 14.5

Domain	Indicator	Account Source	Measurement	SDG Link
Environmental	Ecosystem condition	Condition accounts	Index (0-1)	14.2
Economic	Ocean GVA	Economic accounts	USD	14.7
Social	Ocean employment	Labour accounts	FTE	14.b
Governance	MPA coverage	Extent accounts (protected area overlay)	% of EEZ	14.5

¶15 For interim MPA coverage calculations, compilers should use UNEP-WCMC/IUCN WDPa data¹³.

Downward connections to accounts and indicators

¶1 Sustainable ocean planning requires specific accounts and indicators to inform decision processes. The following table maps planning use cases to the accounts that should be compiled and the indicators that should be derived:

¶2 *Table 3.2.2: Planning use cases and required accounts*

Planning use case	Required accounts	Key indicators	Informed decisions
Sustainable ocean economy roadmap	Ocean economy accounts (TG-2.5), Asset accounts (TG-3.1)	Ocean GVA, ocean employment, net ocean GVA (adjusted for depletion), fish stock biomass relative to sustainable yield	Setting economic growth targets consistent with natural capital maintenance; identifying sectors for investment and sectors requiring conservation measures
SDG 14 implementation plan	Extent accounts, condition accounts, asset accounts, residual flow accounts	MPA coverage (14.5.1), fish stocks at sustainable levels (14.4.1), coastal eutrophication (14.1.1), ocean economy contribution to GDP (14.7.1)	Tracking SDG 14 progress; identifying data gaps; targeting interventions to accelerate progress
Integrated coastal management	Physical supply-use tables (TG-3.2, TG-3.4), condition accounts, drainage basin allocation	Land-based residual flows to coastal waters (nutrient loading, sediment, pollutants), ecosystem condition by coastal zone	Identifying land-based sources of marine pollution; targeting wastewater treatment, agricultural runoff controls, and sediment retention measures
Marine spatial planning	Extent accounts, condition accounts, economic accounts, ecosystem service accounts	Ecosystem distribution by spatial unit, activity-ecosystem overlap, service flows by providing area	Spatial zoning, conflict resolution, trade-off analysis between conservation and development

¶3 Table 3.2.2 is also the account-prioritisation aid for countries that can compile only one or two account types at first. The planning process that is actually live determines the first-priority account: a fisheries crisis points to asset accounts for aquatic resources, which link directly to stock recovery targets and SDG 14.4; a first SDG 14 Voluntary National Review points to extent and condition accounts, which have the lowest data threshold and map onto indicators 14.5.1 and 14.2; a blue economy strategy points to ocean economy accounts, which establish the baseline any growth target is set against; and a pollution emergency points to residual flow accounts, which trace land-based sources and support intervention targeting.

¶4 Countries with the least capacity should treat extent accounts as the starting point regardless of context. Area data for the major ecosystem types can usually be compiled from existing remote sensing products and protected area registries without primary data collection, and the resulting series supports both SDG 14.5.1 reporting and the spatial baseline that every later account is referenced to. The structured readiness diagnostic in **TG-0.8 Implementation Readiness Assessment** Section 3.2 sets the sequencing in the wider context of a national programme.

3.3 Balancing economic and environmental objectives

¶1 A core function of sustainable ocean planning is to weigh trade-offs between economic objectives and environmental protection. Ocean accounts support that weighing by providing integrated information that allows decision-makers to assess how different choices affect both domains simultaneously. The extended balance sheet approach enables full assessment of ocean wealth. It records both produced assets (ports, vessels, coastal infrastructure) and natural capital (ecosystem assets, fish stocks, seabed resources) within a consistent valuation framework. As the 2025 SNA establishes, natural capital comprises natural resources (recognised within the integrated framework of national accounts) and ecosystem assets (measured through SEEA Ecosystem Accounting)¹⁴. Changes in this extended balance sheet indicate whether development is increasing overall wealth, converting natural capital into produced capital, or depleting natural capital without corresponding gains.

¶2 The ecosystem degradation concept provides a monetary measure of the cost of environmental decline. Degradation is defined as the decline in the expected future ecosystem service flows attributable to human activity during an accounting period¹⁵. By measuring degradation in monetary terms consistent with national accounts, planners can assess the full costs of development pathways that damage marine ecosystems.

¶3 Degradation is calculated as the condition decline multiplied by the present value of the affected service flows, with the applicability conditions and discount-rate treatment specified in **TG-3.1 Asset Accounts** Section 3.5.3. For planning purposes the significance is that degradation is a cost, denominated in the same units as the development benefits it is weighed against, and that it is currently omitted from most national accounts – so a development pathway that looks positive on conventional measures may not be once it is included.

¶4 Practical application of this balancing function involves several steps, summarised in Table 3.3.0 below.

¶5 **Table 3.3.0: Steps in applying ocean accounts to balance economic and environmental objectives**

Step	Description
Baseline assessment	Establish current stocks of ocean assets (ecosystem extent and condition, individual environmental assets, produced assets) and current flows (ecosystem services, economic production, residual flows).
Scenario development	Define alternative planning scenarios representing different combinations of economic development and conservation measures.
Impact assessment	For each scenario, project changes in asset stocks and service flows using accounting relationships and appropriate models.
Trade-off analysis	Compare scenarios in terms of their effects on multiple indicators spanning economic, environmental, and social dimensions.
Stakeholder deliberation	Present trade-off information in accessible formats to support informed decision-making by relevant stakeholders.

¶6 The accounting framework ensures that these assessments maintain internal consistency. As all components are linked through supply-use relationships and stock-flow identities, changes pro-

jected for one component must be reconciled with changes in related components. This discipline prevents the optimistic assumptions that can otherwise undermine planning processes.

Dashboard approach for ocean sustainability monitoring

¶1 The ocean sustainability dashboard presents integrated sustainability information as a set of headline indicators spanning economic, environmental, and social dimensions, tracked over time and compared against targets. Table 3.3.1 presents an illustrative dashboard structure populated with synthetic data.

¶2 *Table 3.3.1: Ocean sustainability dashboard (Country A, illustrative)*

Dimension	Indicator	Current value	5-year target	Status	Account source
Economic	Ocean GVA (% of GDP)	3.5%	4.0%	On track	Ocean economy accounts
	Net ocean GVA (adjusted for depletion)	3.3% of GDP	3.8% of GDP	Below target	Asset accounts + economy accounts
	Ocean employment (thousand FTE)	250	280	On track	Labour accounts
Environmental	Fish stocks at sustainable levels (% of assessed stocks)	68%	80%	Below target	Asset accounts (aquatic resources)
	Coral reef condition index (0-1)	0.62	0.70	Below target	Condition accounts
	Mangrove extent (km ²)	497	550	Below target	Extent accounts
	Marine protected area coverage (% of EEZ)	18%	30%	On track	Extent accounts (protected area overlay)
Social	Ocean employment share female (%)	38%	45%	On track	Labour accounts
	Coastal communities with livelihood dependency >50% (count)	127	100	Action needed	Household survey / labour accounts disaggregated by coastal zone ¹⁶
Pollution	Coastal eutrophication (nitrogen loading, tonnes/yr)	8,500	6,000	Below target	Residual flow accounts
	Marine plastic debris density (g/km ²)	142	100	Below target	Residual flow accounts

¶3 Figure 1.4.1 presents this dashboard as an interactive view for senior decision-makers. The summary cards report how many indicators sit in each status band. The controls let users filter by status or re-rank indicators by the size of their gap to target, whilst hovering any row reveals the underlying values. The contrast between on-track economic indicators and lagging environmental and pollution indicators is apparent.



Figure 1.4.1 Static snapshot of the ocean sustainability dashboard (Country A, illustrative).

¶4 The dashboard indicates that whilst economic indicators are on track to meet targets, environmental and pollution indicators are lagging. This pattern suggests that economic growth is occurring at the expense of natural capital depletion, a finding confirmed by the gap between gross ocean GVA (3.5%) and net ocean GVA adjusted for depletion (3.3%). The dashboard structure enables presentation to cabinet-level decision-makers and supports integrated policy responses that address economic, environmental, and social dimensions simultaneously. This approach draws on the combined presentation principles described in **TG-3.8 Combined Presentations**, which provides detailed guidance on assembling multi-dimensional indicator sets from ocean accounts.

3.4 Integration with SDG monitoring

¶1 SDG 14 (“Conserve and sustainably use the oceans, seas and marine resources for sustainable development”) establishes a global framework for ocean sustainability with specific targets and indicators¹⁷. Ocean accounts provide a structured basis for producing many of these indicators and for understanding the relationships between them.

¶2 Key SDG 14 targets and their connection to ocean accounts include:

Target	Description	Ocean Account Connection
14.1	Reduce marine pollution	Residual flow accounts, ecosystem condition indicators
14.2	Sustainably manage marine ecosystems	Ecosystem extent and condition accounts, ecosystem services accounts
14.4	End overfishing, restore fish stocks	Asset accounts for aquatic resources, depletion calculations
14.5	Conserve coastal and marine areas	Ecosystem extent accounts (protected area overlay)
14.7	Increase economic benefits to SIDS and LDCs	Ocean economy thematic accounts, ecosystem services valuation

SDG 14 monitoring and ocean accounts

¶1 Sustainable Development Goal 14 encompasses ten targets and eleven indicators covering marine pollution, ecosystem management, ocean acidification, fisheries sustainability, marine protected areas, small-scale fisheries, marine research, and UNCLOS implementation¹⁸. As of 2024, all SDG 14 indicators have an established methodology (Tier I or II), although data coverage remains uneven across regions and indicators¹⁹. Data gaps persist, particularly for small island developing states and developing countries, and for targets relating to marine pollution (SDG 14.1), subsidies (SDG 14.6), and economic benefits to SIDS and LDCs (SDG 14.7)²⁰.

¶2 Ocean accounts provide a systematic framework for generating data that supports SDG 14 monitoring. Physical extent accounts map directly to indicator 14.5.1 (marine protected area coverage). Asset accounts for fish stocks support indicator 14.4.1 (proportion of fish stocks within biologically sustainable levels). Flow accounts for residuals support indicator 14.1.1 (coastal eutrophication and floating plastic debris density). Economic accounts enable assessment of the economic contribution of sustainable fisheries (14.7.1). The accounting approach provides an integrated information system from which a range of indicators can be drawn, in place of bespoke data collection for each indicator in isolation.

¶3 The Kunming-Montreal Global Biodiversity Framework (GBF), adopted in December 2022, establishes complementary targets relevant to ocean accounting, including Target 3 (30% of marine areas effectively conserved by 2030), Target 5 (sustainable harvesting of wild species), and Target 10 (sustainable management of areas under agriculture, aquaculture, and forestry)²¹. Ocean accounts can generate indicators aligned with both SDG 14 and GBF targets, and the shared 'data foundations' required for monitoring both frameworks reinforce the case for investment in ocean accounting.

¶4 Beyond SDG 14, ocean accounts support monitoring of other SDGs that intersect with ocean sustainability. SDG 2 (Zero Hunger) targets benefit from accounts that track fish provisioning and aquaculture production. SDG 8 (Decent Work and Economic Growth) targets can draw on ocean economy thematic accounts that measure employment and value added in ocean sectors. SDG 13 (Climate Action) targets connect to accounts measuring blue carbon stocks and sequestration services²².

¶5 National ocean accounts provide the macro-level reference data against which corporate biodiversity disclosures can be benchmarked. Guidance on aligning ocean accounts with private sector reporting frameworks (including GBF Target 15 and the Taskforce on Nature-related Financial Disclosures) is set out in **TG-1.11 OA and the Private Sector** Section 3.3.

3.5 Planning frameworks and ocean accounts

¶1 Sustainable ocean planning is not a single process. Ocean accounts feed several established planning frameworks, each of which is treated in its own circular. Table 3.5.1 routes to them, and states what each framework takes from the accounts.

¶2 *Table 3.5.1: Planning frameworks, the accounts they draw on, and where each is treated*

Planning framework	What it takes from the accounts	Treated in
Marine spatial planning	Ecosystem extent and condition by spatial unit; the spatial footprint and intensity of activities; service flows by providing and benefiting area; pressure sources and pathways	TG-1.2 OA and Marine Spatial Planning
Marine spatial management and MPAs	Extent and condition baselines for designation; time-series condition for effectiveness; service flows for economic impact of restrictions	TG-1.3 OA and Marine Spatial Management

Planning framework	What it takes from the accounts	Treated in
Integrated coastal management	Terrestrial-to-marine attribution of residual loads; dependence of coastal condition on upstream pressure; coastal protection service supply	TG-3.4 Section 3.5 for the attribution method; this Circular Section 3.2 for the indicators
Fisheries management	Stock biomass against reference points; catch against sustainable yield; depletion; sector economic structure	TG-1.5 OA and Fisheries Management
Blue economy strategy	Ocean GVA, employment and trade; sector dependence on ecosystem services; whether the growth path maintains or erodes natural capital	TG-2.5 Structure and Function of the Ocean Economy ; TG-1.10 for the planning-cycle integration
Climate adaptation planning	Blue carbon stocks and sequestration; condition indicators sensitive to climate drivers; coastal protection service at risk; exposed areas and populations	TG-2.8 Climate Change Indicators ; TG-2.9 Disaster Risk Indicators

¶3 The value of the accounting framework across these frameworks is that they draw on one coherent evidence base rather than several incompatible ones. A country running marine spatial planning, a blue economy strategy and an adaptation plan concurrently will otherwise generate three different figures for the extent of its mangroves, and the inconsistency will be discovered in public.

3.6 Worked example: Ocean sustainability dashboard

¶1 To demonstrate the practical application of ocean accounts to sustainable ocean planning, this section presents a synthetic worked example showing how account-derived indicators populate an ocean sustainability dashboard for decision-makers. The example uses hypothetical data for a medium-sized coastal state developing a five-year sustainable ocean economy roadmap.

Scenario

¶1 Country B is a middle-income coastal state with an ocean economy contributing 4.2% of GDP and employing 380,000 people. The government is developing a sustainable ocean economy roadmap for 2025–2030 that aims to increase the ocean economy's GDP contribution to 5.5% whilst ensuring fish stocks are rebuilt to sustainable levels and coastal ecosystems are protected. The Ministry of Finance requires quantified evidence that the proposed roadmap maintains natural capital and does not rely on unsustainable resource depletion.

Account compilation

¶1 The National Statistics Office compiled the accounts summarised in Table 3.6.0 below for base-line year 2024. The asset account for aquatic resources records opening biomass of 156,000 tonnes, natural growth of 41,000 tonnes, natural mortality of 13,000 tonnes, net natural change of 28,000 tonnes, actual catch of 32,000 tonnes/yr, and closing stock of 152,000 tonnes. Sustainable yield is 28,000 tonnes/yr (equal to net natural change), implying depletion of 4,000 tonnes/yr.

¶2 **Table 3.6.0: Baseline accounts compiled for Country B (2024)**

Account	Baseline values
Ocean economy thematic accounts (TG-2.5)	Ocean GVA = USD 2,100 million (4.2% of GDP); employment = 380,000 FTE.

Account	Baseline values
Asset accounts for aquatic resources (TG-3.1)	Closing stock = 152,000 tonnes; catch = 32,000 tonnes/yr; sustainable yield = 28,000 tonnes/yr; depletion = 4,000 tonnes/yr.
Ecosystem extent accounts	Mangroves = 1,240 km ² ; seagrass = 890 km ² ; coral reefs = 620 km ² .
Ecosystem condition accounts	Mangrove condition index = 0.68; seagrass condition index = 0.71; coral reef condition index = 0.58 (all relative to reference condition = 1.0).
Residual flow accounts (TG-3.4)	Nitrogen loading to coastal waters = 12,400 tonnes/yr; plastic debris flux = 3,200 tonnes/yr.

Indicator derivation

¶1 From these accounts, the following sustainability indicators were derived for the dashboard:

¶2 *Table 3.6.1: Baseline sustainability indicators for Country B (2024)*

Dimension	Indicator	Value	Account source
Economic	Ocean GVA (% of GDP)	4.2%	Ocean economy accounts
	Gross ocean GVA (USD million)	2,100	Ocean economy accounts
	Depletion (fish stocks, USD million)	12	Asset accounts (depletion valued at resource rent) ²³
	Net ocean GVA (USD million)	2,088	Economy accounts minus asset depletion
	Net ocean GVA (% of GDP)	4.18%	Adjusted measure
	Ocean employment (thousand FTE)	380	Labour accounts
Environmental	Fish stock biomass (% of MSY level)	78%	Asset accounts (closing stock 152,000 t ÷ MSY biomass target 195,000 t) ²⁴
	Fish stocks at sustainable levels	No (catch 32,000 t > sustainable yield 28,000 t)	Asset accounts
	Mangrove extent (km ²)	1,240	Extent accounts
	Mangrove condition index	0.68	Condition accounts
	Coral reef condition index	0.58	Condition accounts
Pollution	Nitrogen loading (tonnes/yr)	12,400	Residual flow accounts
	Marine plastic debris (tonnes/yr)	3,200	Residual flow accounts

Scenario projections

¶1 The sustainable ocean economy roadmap proposes three intervention packages, each with projected effects on economic and environmental indicators. The projections use the accounting identities to ensure internal consistency: changes in fish stock biomass are reconciled with extraction and growth rates, changes in ecosystem extent affect service flows, and changes in condition affect service capacity.

¶2 *Table 3.6.2: Scenario projections for 2030 target year*

Indicator	Baseline 2024	Scenario A: Business as usual	Scenario B: Moderate intervention	Scenario C: Strong conservation	2030 Target
Ocean GVA (% of GDP)	4.2%	4.8%	5.2%	5.0%	5.5%
Net ocean GVA (% of GDP)	4.18%	4.3%	5.0%	4.9%	5.3%
Fish stock biomass (tonnes)	152,000	121,000	152,000	210,000	195,000
Catch (tonnes/yr)	32,000	34,000	28,000	28,000	≤28,000
Depletion (tonnes/yr)	4,000	6,000	0	0	0
Mangrove extent (km ²)	1,240	1,190	1,280	1,320	1,350
Coral condition index	0.58	0.52	0.63	0.68	0.70
Nitrogen loading (tonnes/yr)	12,400	13,800	10,200	8,500	9,000

¶3 **Scenario A (Business as usual):** Continuation of current policies results in increased ocean GVA but continued depletion of fish stocks (depletion rising to 6,000 tonnes/yr), declining mangrove extent (–50 km²), and worsening coral condition. Net ocean GVA grows more slowly than gross GVA due to increased depletion costs. That widening gap indicates unsustainable resource use.

¶4 **Scenario B (Moderate intervention):** Implementation of catch limits at sustainable yield (28,000 tonnes/yr), mangrove restoration (+40 km²), and wastewater treatment upgrades reducing nitrogen loading by 18%. Ocean GVA reaches 5.2% of GDP, depletion stops, and net ocean GVA growth matches gross growth. Holding catch at sustainable yield stabilises the stock at 152,000 tonnes rather than rebuilding it (TG-1.5 Table 3.4.1), so the “fish stocks at sustainable levels” indicator is not achieved by 2030: catch is at sustainable yield, but the stock stays at 78% of the MSY biomass target²⁵. Rebuilding to 195,000 tonnes by 2030 would require catch held below sustainable yield, at about 20,800 tonnes/yr on the account’s own flows.²⁶

¶5 ⓘ **Corrected 24 September 2026**

¶6 Scenario B previously showed catch at sustainable yield rebuilding the stock to 195,000 tonnes; on the account’s own stock identity it holds the stock at 152,000 tonnes, so the projection, the 2024 opening stock and natural growth, the Scenario A biomass and the dashboard status have been corrected to match.

¶7 **Scenario C (Strong conservation):** More aggressive interventions including marine protected area expansion, larger restoration programmes, and stronger pollution controls. Environmental indicators exceed targets (fish stock biomass reaches 210,000 tonnes, above the 195,000 t MSY target), but ocean GVA growth is slightly constrained (5.0% vs 5.5% target) due to spatial allocation of 15% of fishing grounds to no-take MPAs. The stock recovery in Scenario C reflects enhanced recruitment from no-take zones and reduced bycatch mortality, projected using a spatial population model.

***Note on scenario modelling levels:** The accounting-based scenario projections in Scenarios A and B can be implemented using stock identity accounting – opening stock + net natural change – catch = closing stock – and do not require specialist fisheries modelling. The spatial population model referenced in Scenario C requires collaboration with fisheries scientists and is presented for completeness, not as a minimum requirement for compilers. For practitioners who wish to pursue Scenario C-level analysis, see FAO (1999) Guidelines for the routine collection of capture fishery data²⁷ and ICES (2021) stock assessment guidance²⁸.*

Dashboards presentation

¶1 The scenario analysis was presented to cabinet in Table 3.6.3, showing the trade-offs between economic growth and environmental outcomes:

¶2 Table 3.6.3: Sustainable ocean economy roadmap dashboard (Country B)

Indicator	2024 Baseline	2030 Target	Scenario B projection	Status
Economic outcomes				
Ocean GVA (% of GDP)	4.2%	5.5%	5.2%	Near target
Net ocean GVA (% of GDP)	4.18%	5.3%	5.0%	Near target
Ocean employment (thousand FTE)	380	450	440	On track
Environmental outcomes				
Fish stocks at sustainable levels	No	Yes	No	Below target
Fish stock biomass (tonnes)	152,000	195,000	152,000	Below target
Mangrove extent (km²)	1,240	1,350	1,280	On track
Coral condition index	0.58	0.70	0.63	On track
Pollution reduction				
Nitrogen loading (tonnes/yr)	12,400	9,000	10,200	On track
Plastic debris (tonnes/yr)	3,200	2,000	2,400	On track

Policy implications

¶1 The analysis demonstrated that:

1. ¶2

Gross GVA overstates sustainability: The gap between gross and net ocean GVA (4.2% vs 4.18% in 2024, widening to 4.8% vs 4.3% under business-as-usual in 2030) reveals that current growth relies on natural capital depletion. This finding, grounded in the 2025 SNA treatment of depletion as a production cost, indicated to the finance ministry that current policies risk unsustainability.

2. ¶3

Catch at sustainable yield halts depletion; rebuilding needs catch below it: Scenario B shows that reducing catch to sustainable yield (28,000 tonnes/yr) stops the depletion recorded in as-set accounts and eliminates the NDP adjustment, but holds the stock at 152,000 tonnes. Recovering to the MSY biomass target of 195,000 tonnes over six years requires catch of about 20,800 tonnes/yr, below sustainable yield, until the stock has rebuilt. The stock identity makes the size of that trade-off visible before a target is set.

3. ¶4

Restoration investments yield long-term returns: The mangrove restoration component of Scenario B (+40 km² by 2030) costs an estimated USD 15 million over six years but generates coastal protection services valued at USD 480,000/yr (replacement cost basis) and carbon sequestration services valued at USD 160,000/yr. Together, these annual service flows total USD 640,000. The undiscounted breakeven point is approximately year 23 ($\text{USD } 15,000,000 \div \text{USD } 640,000/\text{yr} \approx 23.4$ years). Practitioners should apply their country's social discount rate when replicating this analysis. Blue carbon values may increase as carbon prices rise, and any such increase would strengthen the net benefits case over time²⁹. These service flows are recorded in ecosystem service accounts (TG-3.2).

4. ¶5

Pollution controls support ecosystem recovery: The 18% reduction in nitrogen loading under Scenario B (from 12,400 to 10,200 tonnes/yr), achieved through wastewater treatment upgrades costing USD 22 million, improves water quality sufficiently to support coral and seagrass condition improvement. The condition improvements are projected to increase ecosystem service capacity by 8%. That capacity gain yields fishery nursery benefits that partially offset the costs of pollution controls.

¶6 Based on this analysis, the cabinet approved Scenario B as the basis for the sustainable ocean economy roadmap, with specific budget allocations for catch management enforcement, man-grove restoration, and wastewater infrastructure documented in the national budget presentation (**TG-1.1 OA and National Budget Processes**).

4. Acknowledgements

¶1 **Authors:** [To be confirmed]

¶2 **Reviewers:** [To be confirmed]

5. References

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4. ¶4 United Nations. (2021). *System of Environmental-Economic Accounting – Ecosystem Accounting*, Chapter 14, paras 14.28-14.32.
5. ¶5 United Nations, et al. (2014). *System of Environmental-Economic Accounting 2012: Central Framework*, Chapter III.
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0. ¶10 United Nations. (2025). *System of National Accounts 2025*, Chapter 1, para 1.42.
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4. ¶14 United Nations. (2025). *System of National Accounts 2025*, Chapter 35, para 35.12.
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6. ¶16 This indicator requires primary household survey data rather than standard account compilation. NSOs should note it as supplementary data outside the main accounts pipeline.
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8. ¶18 United Nations. (2017). *Global indicator framework for the Sustainable Development Goals*. A/RES/71/313, Annex, Goal 14 indicators.
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0. ¶20 United Nations. (2023). *Global Sustainable Development Report 2023*, Chapter 3.
1. ¶21 Convention on Biological Diversity. (2022). *Kunming-Montreal Global Biodiversity Framework*, Targets 3, 5, and 10.
2. ¶22 United Nations. (2021). *System of Environmental-Economic Accounting – Ecosystem Accounting*, Chapter 13.
3. ¶23 Depletion valued at illustrative resource rent of USD 3,000/tonne for a mixed demersal/pelagic fishery (4,000 t × USD 3,000/t = USD 12 million). The resource rent is derived from an assumed ex-vessel price of approximately USD 4,500/t and a fishing cost ratio of ~33%, yielding a rent margin of ~USD 3,000/t. The species mix is illustrative of a mid-value mixed fishery. Compilers should derive resource rent from national fisheries price and cost data. See SEEA CF Section 5.9.3 for the resource rent valuation method and **TG-3.1 Asset Accounts** and **TG-1.1 OA and National Budget Processes** for detailed methodology. This figure is illustrative only.
4. ¶24 Sustainability percentage = closing stock (152,000 t) ÷ MSY biomass target (195,000 t). Closing-stock convention is applied consistently in Table 3.6.2. The MSY biomass target of 195,000 t is an illustrative value consistent with the Schaefer model relationship $B_{MSY} \approx K/2$, where K (carrying capacity) is estimated at approximately 390,000 t based on the stock's historical abundance data in this synthetic example.
5. ¶25 "Fish stocks at sustainable levels" is triggered by the stock reaching or exceeding the MSY biomass target. Under Scenario B, catch at sustainable yield holds the stock at 152,000 t, so the criterion is not met by 2030. See

FAO (2005) *Reference points for fisheries management* for the biological rationale for using B_{MSY} as a sustainability threshold.

6. ¶26 **Scenario A and B stock projections.** Both apply the stock identity (opening stock + net natural change – catch = closing stock) with net natural change held at its 2024 value of 28,000 t/yr, which equals sustainable yield. Under Scenario A, catch rises linearly from 32,000 t to 34,000 t by 2030, so cumulative depletion over 2025–2030 is 31,000 t and the stock falls to about 121,000 t. Under Scenario B, catch equals sustainable yield and the stock holds at 152,000 t. Reaching 195,000 t by 2030 needs an average net addition of about 7,200 t/yr (43,000 t over six years), so catch of about 20,800 t/yr. A surplus production model does not change this materially: on a Schaefer curve with carrying capacity of about 390,000 t (footnote 24), surplus production at 152,000 t (78% of B_{MSY}) is already about 95% of its maximum and can rise by only about 5% as the stock rebuilds, so catch at the current sustainable yield leaves the stock close to where it is. See FAO (2005) *Reference points for fisheries management* for the biological rationale.
7. ¶27 FAO. (1999). *Guidelines for the routine collection of capture fishery data*. FAO Fisheries Technical Paper No. 382. The Scenario A and B projections apply the stock identity with net natural change held at its 2024 value (see footnote 26).
8. ¶28 ICES. (2021). *Technical Guidelines: Fisheries Management Reference Points for Category 1 and 2 Stocks*. ICES Advice 2021, DOI: 10.17895/ices.advice.7891.
9. ¶29 HM Treasury. (2022). *The Green Book: Central Government Guidance on Appraisal and Evaluation*. ISBN 9781528622295. Provides social discount rate guidance using the Social Time Preference Rate (STPR) approach.

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